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PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Application of D. Swistak et al.
Serial No. 10/677,772
Filed: 10/1/03
For: Leaching Chamber with Inward Flaring
Sidewall Perforations

Date: September 22, 2006
Examiner: T. Mayo
Art Group: 3671
Atty Docket No. 2313

DECLARATION

1. I, Ronald Brochu, hold a bachelor of science degree in mechanical engineering. I am an employee of Infiltrator Systems, Inc., assignee of the present application. I have 20 years of experience in the field of design and manufacture of plastic parts, in particular with injection molding and other manufacturing methods. I have 6 years of experience with leaching and stormwater chambers.

2. Some chambers are made by thermoforming sheets, such as the chambers described by DeTuillo in his patent number 6,854,925. I am familiar with commercial products sold by Cultec, Inc., with which Mr. DeTuillo is associated. Typically, holes in the sidewalls of such chambers are cut, after the part is thermoformed from a flat sheet, e.g., by punching, drilling or sawing. Thus, they would not have any taper. The nature of thermoforming is such that wall thickness varies according to how much the sheet has been stretched at any point. When such kinds of chambers are used for wastewater leaching they are necessarily covered by a geotextile to prevent infiltration of soil into the holes.

3. Other leaching chambers, such as those sold commercially by Infiltrator Systems and Advanced Drainage Systems, Inc., of the type described in Nichols et al. Patent No. 4,759,661 are made by injection molding with molded slots. Injection molding enables good control over wall thickness and slot shape. Slots are shaped and oriented to limit the extent to which surrounding soil will infiltrate into the interior of the chamber -- in context that the design flow of water is outwardly. Before our present invention, slot perforations had outward flare. The retracting mold slides which form such slots were in the cavity part of the mold, i.e., that part which forms the exterior surface of the chamber, and they draw or "pull"

in an outward direction relative to the chamber. A corollary of such outward draw, in context of general principles of having draft on mold slide parts, is that inward flare of slots is not possible using the prior art technology.

4. Molding considerations work against inward flaring slots. In order to have inward flaring slots or other shape perforations, the mold slides which define the perforations have to retract into the core part of the mold, as described in the application. How to do that required molding method invention.

5. In the Swistak et al. invention, we at Infiltrator Systems obtain several surprising benefits from using inward flaring slots; namely, reduced plastic material cost, increased rate of production, and reduced shipping cost.

The reasons are as follows: An inside flaring hole enables significantly reduced sidewall thickness, when achieving any predetermined Soil Threshold Angle (STA). This is explained at pages 7 and 8 or our application.

When we reduce wall thickness, we reduce the amount and cost of material in a chamber. We also reduce the time required for cooling in the mold and thus the rate of production.

When we reduce wall thickness, we also increase the number of chambers which can be nested together to form a stack of a given height. Stack height is limited by trucking equipment and regulations. So, increasing the number of chambers which can be carried on a truck decreases shipping cost per chamber, an important factor.

6. Clogging of slots in leaching chambers, due to mechanical packing of soil particles in the slot is not known as a problem in leaching chamber use.

Sometimes, the soil adjacent the slots may clog. A so-called biomat or slime layer is normally created in the soil. Clogging, or diminished capacity to pass water, occurs when there is excess accumulation of organic material and bacterium in the biomat. This is a result of the organic load in the wastewater and the biochemical conditions in the chamber and at the soil interface. The organic material which clogs the soil is dissolved and very fine suspended matter that is carried by the wastewater which is flowing out of the chamber. This kind of clogging is not due to flow of soil particles toward or into the slot, are far as is known.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

/ Ronald Brochu/ September 22, 2006

Ronald Brochu Date